

exchangers in an order different from the order of said at least two ion exchangers connected by said main route.

REMARKS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-11 are presently pending in this application, Claims 1-4 and 9-11 having been withdrawn from further consideration by the Examiner, Claim 5 having been amended by the present amendment.

In the outstanding Office Action, Claims 5, 6 and 8 were rejected under 35 U.S.C. §102(b) as being anticipated by Muller et al. (U.S. Patent 4,383,920); and Claim 7 was rejected under 35 U.S.C. §103(a) as being unpatentable over Muller et al. in view of Obata et al. (U.S. Patent 5,571,419) or WO 97-30939 (hereinafter "WO '939").

Claim 5 has been amended to clarify the subject matter recited therein. This claim amendment is believed to be supported by, for example, Figures 7-9 of Applicants' drawings. Hence, no new matter is believed to be added thereby.

Briefly, Claim 5 of the present invention is directed to an ultrapure water producing apparatus including at least two ion exchangers each configured to purify water, a main route connecting the at least two ion exchangers in series, and a plurality of bypass routes connected to the main route and connecting the at least two ion exchangers in series such that the water flows through the at least two ion exchangers in an order different from the order of the at least two ion exchangers connected by the main route. By providing such bypass routes, the ion exchangers are connected in series in different orders of the ion exchangers,

and when the ion exchangers are replaced alternately, and during the elution of a metal component from a new ion exchanger, its discharge can be supplied to the remainder of the ion exchangers to remove the metal component, thereby preventing pure water containing the metal component to be supplied to the point in use.¹

Muller et al. disclose a mobile fluid purification system. Nevertheless, it is respectfully submitted that Muller et al. do not teach “a plurality of bypass routes connected to said main route and connecting said at least two ion exchangers in series such that the water flows through the at least two ion exchangers in an order different from the order of said at least two ion exchangers connected by said main route” as recited in Claim 5. On the other hand, Muller et al. discloses the tank 1-6 connected to the hoses 24, 24A-E and the 25A-E running parallel to the hoses 24, 24A-E via the tanks 1-6. That is, the tanks 1-6 basically are connected in parallel but by using valves, raw water is channeled to flow entirely or sectionally in series in the Muller et al. system.² As such, the Muller et al. system may allow to selectively use any of the tanks 1-6, but it is believed that the Muller et al. system would not be able to switch the order of the tanks in serial connections without mixing up upstream water and downstream water. Therefore, the structure recited in amended Claim 5 is believed to be distinguishable from Muller et al.

Obata et al. merely disclose a method of producing pure water in which the weak anion exchanger 26, the strong cation exchanger 27, and the strong anion exchanger 28 are provided in series, and WO '939 discloses an apparatus for producing ultra pure water. However, neither Obata et al. nor WO '393 teaches “a plurality of bypass routes connected to said main route and connecting said at least two ion exchangers in series such that the water

¹ See Specification, page 18, line 24, to page 19, line 4.

² See Muller et al., Table.

flows through the at least two ion exchangers in an order different from the order of said at least two ion exchangers connected by said main route” as recited in Claim 5. Thus, the structure recited in amended Claim 5 is believed to be distinguishable from Obata et al. and WO ‘393.

Because none of Muller et al., Obata et al. and WO ‘939 discloses the bypass routes as recited in amended Claim 5, even the combined teachings of these cited references are not believed to render the structure recited in Claim 5 obvious.

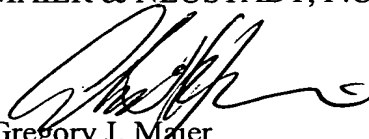
For the foregoing reasons, Claim 5 is believed to be allowable. Furthermore, since Claims 6-8 ultimately depend from Claim 5, substantially the same arguments set forth above also apply to these dependent claims. Hence, Claims 6-8 are believed to be allowable as well.

Applicants also wish to point out that in Muller et al., if pure water is to be fed in the order different from that in which the ion exchanger is provided, structurally required lines include, for example, a line connecting upstream side and downstream side diverging from an upper line comprising hoses 24, 24A-E, and a line connecting upstream side and down stream side diverging from a lower line comprising hoses 25A-E. However, such a structure is not disclosed in Muller et al. Though Muller et al. disclose hoses 32 and 40 that connect an upper line and a lower line, these are to connect six purification tanks partially in parallel, and are not a bypass route. In addition, it appears Sterling et al. disclose an example wherein a plurality of ion exchanges are used in combination, but fail to provide a plurality of bypass routes for flowing pure water in the order different from that in which at least two ion exchangers are provided.

In view of the amendments and discussions presented above, Applicants respectfully submit that the present application is in condition for allowance, and an early action favorable to that effect is earnestly solicited.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



Gregory J. Maier
Registration No. 25,599
Akihiro Yamazaki
Registration No. 46,155
Attorneys of Record



22850

Tel: (703) 413-3000

Fax: (703) 413-2220

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Marked-Up Copy
Serial No: 09/930,132
Amendment Filed on:
06/18/03

RECEIVED
JUN 23 2003
TC 1700

IN THE CLAIMS

Please amend Claim 5 as follows:

--5. (Twice Amended) An ultrapure water producing apparatus comprising:

at least two ion exchangers [provided in series] each configured to purify pure water;

a main route [provided to flow pure water in the order that] connecting said at least two ion exchangers [are provided] in series; and

a plurality of bypass routes connected to said main route [such that the pure water flows through] and connecting said at least two ion exchangers in series such that the pure water flows through the at least two ion exchangers in an order different from the order [that] of said at least two ion exchangers [are provided] connected by said main route.--